Equipment controller EC 531

SULZER

The equipment controller EC 531 is an all-in-one unit for monitoring and control of one or two pumps. It is designated primarily for municipal pumping stations. The software included in the EC 531 is a further development of the PC 441 advanced surveillance systems.

Viewing of alarms, manual control of pumps and changing of settings etc. can be made locally via the graphical user interface. It can also be done via the configuration software AquaProg at a PC, connected directly to the local service port or remotely via e.g. modem. Settings are password protected in two levels to avoid unauthorized or accidental changes.

AquaProg software can be used for backing up the controllers settings on the hard disc, download alarms, events and historical data.

Key control parameters

- Level set-point, including time delays
- Speed of level change
- Random start levels
- Tariff control
- Maximum runtime
- VFD control logic, including flow calculation, day set points, night set-points and adjustable pump reversal speed
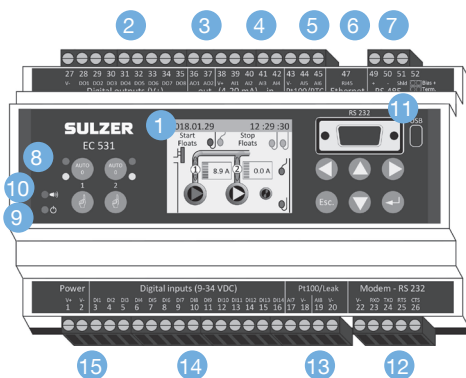- BEP (Best Efficiency Point)

Data communication

- Communication via Modbus (RTU / TCP) protocol with other telemetry or SCADA systems
- I/O and register cross-reference tables for efficient communication setup
- Ethernet communication support

Communication interface

- Communication port RS 232, connect to modem, radio or other serial communication carrier
- Service port for PC connection, RS 232 and USB
- RS 485 to VFD, Soft starters and Energy Meter
- Ethernet by RJ45 plug

Operator panel

The built-in operator panel with graphical display and keypad ensures easy configuration and operation of the EC 531. It allows the operator to see pump status at a glance. Graphical symbols (high temperature, leakage, electric fault, vibration fault) will turn red when an alarm is activated. Detailed information about the behavior of the float controls is displayed in a separate view.
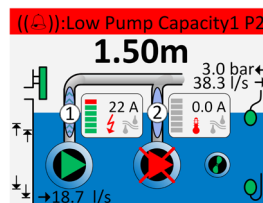
Main screen with a level sensor

Main screen with float control

Data from the panel can be viewed or accessed in different formats: alphanumeric characters or animated graphical symbols.

Functions

1. Graphical operator panel
2. Digital outputs (8)
3. Analog outputs (2)
4. Analog inputs (4)
5. Temperature inputs PTC / Klixon / Pt100 (2)
6. Com port for Modbus on TCP, RJ-45 Ethernet
7. Com port for Modbus on RS 485
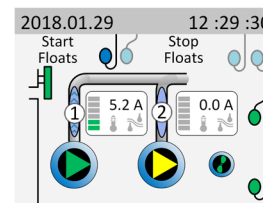8. Off - auto and forced start buttons
9. Power indicator
10. Alarm indicator
11. Service port for PC connection, RS 232 and USB
12. Com port for modem connection, RS 232
13. Leakage sensor inputs or temp. inputs Pt100 (2)
14. Digital inputs (14)
15. Power connection 9-34 VDC

Analog Inputs

Four inputs, 2-wire 4-20mA:

Pit level	Xylem MiniCas Sim
Motor current	Outflow meter
Outlet pressure	Motor temperature
Vibrations	Free choice

Four inputs, 2-wire Analog temperature:
Four Analog inputs:
four can be used as Pt100
two can be used as PTC
two can be used as leakage

Digital Inputs

Run indication	High level float
Manual start	Start float drain pump
Set manual	Local mode
Set auto	Alarm reset
Start float	Power fail
Pump failure	Pulse channel 1-4
Motor protector	Block PID controller
High motor temp. pump	Alarm input (free text)
Leakage pump	Block operation
Stop float	Leakage mixer-drain pump
Low level float	High temp mixer-drain p.
Overflow sensor	

Analog Outputs

Pit level	PID control output
Pit in/outflow	Data register 16 or 32 bits
Pit overflow	Set frequency P1 or P2
Pulse channel 1-4	

Digital Outputs

Pump control P1	Remote control
Pump control P2	Personnel alarm
Reset motor protector	High level
Pump fail	Alarm alert
Not enough pumps available	Not acknowledge alarms
One pump fail	Active alarm
Mixer control	Pump reversing
Drain pump control	Logic IO
Cleaner control	Data register setpoint
Modem control	External reset alert

Integrated amplifiers

- Selectable 4 Pt100 inputs or
- 2 Leakage and 2 PTC/Pt100 inputs

CE

EC 531 fulfill following European council directives and generic standards:

- 2014/30/EU electromagnetic compatibility (EMC) EN 61326-1:2013
- 2011/65/EU restriction of hazardous substances in electrical and electronic equipment (RoHS 2)

Technical specifications

Description	
Ambient operation temperature	-20 to +50 °C (-4 to +122 °F)
Ambient storage temperature	-30 to +80 °C (-22 to +176 °F)
Degree of protection	IP 20, NEMA: type 1
Housing material	PPO, PC, UL 94 V-0
Mounting	DIN Rail 35 mm (1.378" W)
Humidity	0-95 % RH non condensing
Dimension	HxWxD: 86 x 160 x 60 mm (3.39 x 6.30 x 2.36 inch)
Power supply	9-34 VDC SELV or Class 2
Power consumption	< 5.0 W (without output load)
Digital Outputs, properties	8 pcs. configurable logic, max load 1A/output, < 34 VDC (sourcing from power supply), only sourcing -no drain, max load 8 outputs = 4 A.
Digital Input, properties and voltage	14 pcs., max 1 kHz (pulse channels), trig level ~4 VDC, 0-34 VDC
Digital Input resistance	10 k ohm
Analog Inputs	4 channels 4-20mA and 4 channels configurable Pt100/PTC/Leakage
Analog Input resolution (4-20mA)	AI1: 15 bits, AI2-4: 10 bits
Telemetry interface	Ethernet and RS 232
Data logger: Analog signals Digital signals and alarms Crash log	15 days at 16 channels, 1 min interval 4096 events 8 logs, 16 parameters, 90 min before and 45 after crash log initiates, 1 sec. res.
Communication	1 USB Service port (USB mini-b) 1 RS 232 Service port (9p D-SUB F) 1 RS 232 port for telemetry interface (modem) (screw terminals) 1 RS 485 2-wire (galvanic isolated) communication to VFD, soft starters and energy meter (screw terminals) 1 TCP/IP Ethernet for telemetry (RJ45)
Complience	CE CSP us